

**DRAFT NOTICE OF FINAL RULEMAKING
MARICOPA COUNTY AIR POLLUTION CONTROL REGULATIONS
RULE 358 – POLYSTYRENE FOAM OPERATIONS**

PREAMBLE

1. Sections affected:

Rule 358

Rulemaking action:

New Rule

2. The statutory authority for the rulemaking, including both the authorizing statute (general) and the statutes the rule is implementing:

Authorizing statutes: Arizona Revised Statutes, Title 49, Chapter 3, Article 3, Sections 479 and 480 (A.R.S. § 49-479, A.R.S. § 49-479)

Implementing Statute: Arizona Revised Statutes, Title 49, Chapter 1, Article 1, Section 112 (A.R.S. § 49-112)

3. The effective date of the rule:

April 20, 2005

4. A list of all previous notices appearing in the Register addressing the final rule:

Notice of Rulemaking Docket Opening, Arizona Administrative Register,
Volume #9, Issue #33, p. 3677, August 15, 2003.

Notice of Proposed Rulemaking, Arizona Administrative Register,
Volume # 9, Issue # 45, November 7, 2003.

Oral Proceeding, held December 11, 2003 and noticed in Arizona Administrative Register,
Volume # 9, Issue # 45, November 7, 2003.

Notice of Termination of Rulemaking, Arizona Administrative Register,
Volume # 11, Issue #7, February 11, 2005.

Notice of Rulemaking Docket Opening, Arizona Administrative Register,
Volume # 11, Issue #3, January 14, 2005.

Notice of Proposed Rulemaking Arizona Administrative Register,
Volume # 11, Issue #7, February 11, 2005.

Oral Proceeding, held March 17, 2005, and noticed in Arizona Administrative Register, Volume #11, Issue #7, February 11, 2005.

5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

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6. Explanation of the rule, including the department's reasons for initiating the rule:

Historically the Maricopa County Rules and Regulations have not contained a source-specific rule to address pollutants from polystyrene foam operations. New Rule 358 addresses volatile organic compound (VOC) emissions that are emitted from the manufacture of expanded-polystyrene (EPS) foam products. Section 182 (a)(2)(A) of the Clean Air Act requires that Reasonable Available Control Technology (RACT) be applied in ozone nonattainment areas to each stationary facility that is a *major source* of VOC emissions. Maricopa County contains an ozone nonattainment area classified as "serious". Maricopa County has identified four facilities that expand polystyrene (EPS) to make foam products, each of which have uncontrolled VOC emissions that exceed the major source threshold of 50 tons per year. New Rule 358 incorporates reasonably available control technology. It is estimated that VOC emissions from the EPS foam industry will be reduced by 175 - 200 tons per year from 2001 levels due to new Rule 358.

The Basic Process: Regardless of what category of molded foam products an EPS foam facility specializes in, the basic processing steps are the same. The raw material is tiny plastic (polystyrene) beads that are made with liquid pentane gas incorporated within them. In a typical workday, several billion of these beads are heated by steam until the expanding pentane vaporizes to gas puff up each bead from 10 to 50 times its original volume. The resulting "puff" globules are then cured by simply aging them in large containers exposed to air. Aging allows the hot plastic to cool and set, the steam-water to evaporate, and the pressure within each puff globule to equalize with atmospheric pressure. Aging also allows the EPS facility to regulate the amount of VOC that is in the puff in order to control the molding process.

Molding is the final processing operation necessary to produce a molded EPS product. In molding, the aged puff is first conveyed or blown into a mold. If all the curing goals have been accomplished and the VOC is in the proper range, when the mold is closed, pressure and heat applied for the programmed time, and then the mold finally opened, the finished product neither develops fissures and swellings from too much pentane nor does it crumble because there was not enough pentane to fuse all the puff particles together.

Of the four facilities affected by the emission standards of Rule 358, three are block-makers and one is a cup-maker.

Block makers' molds are typically 16 to 24 feet long and have a width and depth of 2 1/4 to 4 feet. The large foam blocks that emerge from these molds are typically cut into insulation boards and flat architectural shapes. The cup-maker has as many as 40 different types of molds and up to a few dozens of each mold-type to make everything from small coffee cups to soup bowls to large 44 oz. tumblers, depending on customer needs. Shape molding typically produces custom parts and custom packaging designed to exactly fit and surround an item to be shipped.

Each facility must both limit the amount of VOC that escapes to the atmosphere in the course of making the foam products and limit the amount of VOC left in the freshly molded product. The patterns of VOC emission from molded EPS products vary. Prior to any restrictions, up to 60% of the pentane in the raw EPS beads might be retained in freshly made blocks and cups. Pentane is a flammable liquid dissolved within the raw polystyrene EPS beads, that serves as a blowing agent to foam the polystyrene some 12 to 100 times its original volume, depending on whether a very dense or very light foam-product is desired.

Summary of Standards:

Section 301 limits the sum of VOC retained in the resulting blocks and the VOC that escaped during processing to 3.0 pounds for every 100 pounds of raw beads processed for block makers. Block-makers will also be allowed an alternative standard for making very light (<0.8 pounds pcf) or very dense products (2.0 pcf or more) blocks from raw beads containing more than 5.5% VOC. Facilities that manufacture these products will be allowed to limit the sum of VOC retained in the resulting blocks and the VOC that escaped during processing to 3.9 pound for every 100 pounds of raw beads processed. This alternative standard is further restricted to apply to no more than 10% of total raw material processed in calendar year 2006, moving down 1 percent per year to a 5% limit in 2011 and thereafter.

Two of the block making facilities affected by Rule 358 each installed a new VOC-emission control system (ECS) in the period since January 2001 when development of the rule was first begun. These ECSs, each of which includes a regenerative thermal oxidizer (RTO), were designed to produce a level of VOC reduction that can meet the emission standards of the proposed new rule.

A second sector of EPS industry produces shapes. There is one shape molding facility in Maricopa County. This facility emits less than 15 tons of VOC per year. Were a shape molder to process sufficient raw EPS beads in a year to potentially emit 50 or more tons of VOC annually, Section 302 limits that the sum of VOC left in the newly molded shapes and the VOC that escaped in processing to 2.7 pounds for every 100 pounds of raw beads processed. Based on research, Maricopa County believes that shape plants can meet the same 2.7 lbs./ 100 lbs. that California's Bay Area Air Quality Management District adopted in 1999. EPS shape manufacturers should be able to meet this standard through the use of lower VOC beads and capture and control of a portion of the process emissions.

A third sector of EPS industry produces cups. Section 303 of Rule 358 limits the sum of VOC retained in the resulting cups and the VOC that escaped during processing to 3.2 pounds for every 100 pound of raw beads processed. The cup maker located in the South Coast Air Quality Management District (SCAQMD) chose to control emissions up to molding and make operational changes to the aging process to comply with the SCAQMD rule. The cup maker in Maricopa County also indicated that they believe that front-end controls and operational changes will be the most cost effective strategy for the local plant.

A fourth sector of the EPS industry expands raw expandable polystyrene particles into ultra-light packing material called loose fill. No molds are used. Rather, the raw material is tiny EPS particles that are already shaped to produce the desired forms when expansion is complete. The only loose-fill maker in Maricopa County is still small. If its potential to emit VOC increases from current levels of less than 20 tons per year to 50 tons or more, the facility would need to comply with Rule 358. Section 304 limits the sum of the VOC that escapes during the processing and the VOC left in the resulting loose fill to 2.4 pounds for every 100 pounds of raw EPS particles processed into finished loose fill. Based on research, Maricopa County believes that loose fill plants can meet a 2.4 lbs./ 100 lbs. standard like Bay Area and SCAQMD districts adopted in California. EPS loose fill manufacturers should be able to meet this standard by capturing and controlling both the bead expansion and puff-aging processes.

7. A reference to any study relevant to the rule that the agency reviewed and either proposes to rely on in its evaluation of or justification for the rule or proposes not to rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

1. Draft RACT Analysis of Rule 358 Expandable Polystyrene Foam, January 2005, Maricopa County Air Quality Department, Phoenix, Arizona.
2. BASF Corporation – Plastic Foams, Mt. Olive, NJ
Technical Bulletin N-840, February 1999, Styropor® expandable polystyrene.
Environmental – Pentane Emissions during Processing.
3. EPA/452/B-02-001 Control Cost Manual, September 2002, OAQPS, Research Triangle Park, N.C. 27711.
4. EPA “Control of VOC Emissions From Polystyrene Foam Manufacturing”, OAQPS, Research Triangle Park, NC, Sept. 1990”, EPA-450/3-90-020.
5. NOVA Chemicals®, Technical Memorandum, Pentane Material Balance M77B vs. M77BLV, Project No. DL-2001-140, Authors: Rick Hudson, Christine Hetzer, Confidential data.
6. PREMIER/INSULFOAM: Chino, California block/board plant. “Table 1: Residual Pentane-Testing Matrix”. Blocks’ Initial VOC-content as a function of the aging time of their constituent-puff.
7. South Coast Air Quality Management District Staff Report for Rule 1175, “Control Of Emissions From The Manufacture Of Polymeric Cellular (Foam) Products”,1991, Laki Tisopoulos, et. al..
8. Bay Area Air Quality Management District Staff Report for Rule 8-52, “Polystyrene, Polypropylene and Polyethylene Foam Product Manufacturing Operations”, Douglas Tolar, et. al., 1999.
9. WinCup/URS Cost Analysis Of Post-Molding controls, December 2003 and January 2004.

10. WinCup informal study of VOC contents during various stages of cup production and after 18 and 22 days of storage, Corte Madera/Richmond CA operations.
11. WinCup informal study of VOC contents during various stages of cup production, April, June, November 2001. Specific details of this report may be confidential.
11. WinCup informal study of VOC contents of 4 different cup types: Newly molded and after, respectively, 1 ,2, 3, 4, and 7 days; and after 2, 3, 4, 5, and 6 weeks. Specific details of this report may be confidential.

8. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

9. The summary of the economic, small business, and consumer impact:

There will be some costs to Maricopa County due to the projected costs that accrue for implementation and enforcement of the new standards. This preliminary economic statement (EIS) was developed to estimate the impact of the rule. This impact statement, comprising potential costs and benefits represents an estimate. Maricopa County solicits input from sources that could be small businesses and organizations on the administrative and other costs required for compliance with the rulemaking, and any other information relevant to the economic, small business and consumer impact statement. Maricopa County has identified four facilities that expand polystyrene (EPS) to make foam products, each of whose uncontrolled VOC emissions exceed the major source threshold, 50 tons per year. Two of these facilities are Title V sources that expect to continue to emit more than 50 tons per year, even when controlling VOC emissions according to this rule. In addition, two of the four facilities recently installed new VOC-control devices. These two facilities provided information to the Department on actual costs for the new systems they installed. The Department used the actual costs to calculate cost effectiveness consistent with the methodology described in EPA Air Pollution Control Cost Manual – Sixth Edition (EPA 452/B-02-001), January 2002.

Two EPS block companies reported spending between \$220,000 and \$310,000 for their capital equipment. One of them also provided additional details. The County used the EPA default values to fill in the particular values which were not provided. Using this method, the cost effectiveness is \$2,104 to \$3,990 per ton of VOC reduced when the rule's standards are met. Based on limited testing information, block makers will probably have to increase aging times for some products. Increasing aging time will require additional aging capacity to maintain current production levels.

The cost of a 1,500 cubic foot aging-bag ranges from approximately \$1,100 to \$5,000 while other equipment, direct installation, and indirect costs range from \$ 1,350 plus \$4,500. The Department received an estimate for a 4,000 cubic feet silo of approximately \$10,000 including ducting. If internal space is tight, vendors can also supply an external bead silo to expand aging capacity.

For the cup-maker, the County estimates a per-ton-reduced cost of under \$3,790 to \$7,038; the midpoint estimate is \$5,400. For these estimates, the County used data from the cost estimates submitted by the cup maker initially in 2002 for manufacturing processes and in 2004 for constructing total enclosures for storage, as well as quotes from oxidizer manufacturers. Both the cup maker and the County used methodology consistent with the EPA Cost manual. Actual costs may be lower if the company's existing means of VOC control has sufficient capacity to also serve additional enclosure(s). The range of cost effectiveness is derived from the range of VOC emissions in the testing information supplied by the cupmaker.

The following table summarizes the cost effectiveness calculations. The details of the cost estimates can be found in the Draft RACT Analysis for Rule 358.

Table 1: Rule Cost Effectiveness

Production Volume of Block Facilities	Est. 2001 VOC Emission TPY	Est. VOC Emission with Rule 358 TPY	Total VOC Emissions Reductions TPY	Annual cost of new ECS from RACT Analysis Appendix	Annual cost per ton VOC reduced*
Small block makers	63.1	27.7	35.4	\$ 170,936	\$ 4,824
Medium block makers	91.1	21.0	70.0	\$ 147,322	\$ 2,104
Large block makers	91.6	57.2	34.4	\$ 137,267	\$ 3,990

Cup-making facility	180.7	143.4	37.3	\$ 201,929	\$ 5,414*
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* EPA range of $\pm 30\%$ = \$3,790 – \$7,038 for cost of ton reduced.

10. A description of the changes between the proposed rule, including supplemental rules, and final rule:

There were changes made to Rule 358 that are not substantive. The following non-substantive administrative changes were made between the text of the proposed rule and the text of the final rule to make the rule more concise and easier to understand:

Section 201- Changed the last sentence by deleting “the time and.”

Section 401.1- Changed the section heading from 502.2b to 502.2c.

Section 401.2- Deleted the phrase “and, for block-makers, Section 502.4.”

Section 503.9 - Changed the Section number 503.9 to 503.8.

11. A summary of the comments made regarding the rule and the agency response to them:

Comments and Responses will be posted at a later date herein.

12. **Any other matters prescribed by statute that are applicable to the specific department or to any specific rules or class of rules:**

None

13. **Incorporations by reference and their location in the rules:**

<u>New incorporations by reference</u>	<u>Location</u>
Bay Area Air Quality Management District, BAAQMD Manual of Procedures, Method 45, Volume III	Section 504.5
South Coast Air Quality Management, AQMD Method 306-91, 1993 revision	Section 504.6
EPA Test Method 204 a,b,c,d,e and f 40 C.F.R.51, Appendix M	Section 504.4
ASTM International ASTM Method #C303-02	Section 504.8
<u>Incorporations by reference updated to 7/1/03</u>	<u>Location</u>
40 C.F.R. 60, Appendix A	Section 504

14. **Was this rule previously made as an emergency rule?**

No

15. **The full text of the rule follows:**

RULE 358

POLYSTYRENE FOAM OPERATIONS

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MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS
REGULATION III - CONTROL OF AIR CONTAMINANTS
RULE 358
POLYSTYRENE FOAM OPERATIONS

SECTION 100 – GENERAL

- 101 PURPOSE:** The purpose of this rule is to limit the emissions of volatile organic compounds (VOCs) from the manufacturing of expanded-polystyrene products.
- 102 APPLICABILITY:** This rule applies to any facility that expands, ages, or molds expandable polystyrene (EPS).

SECTION 200 – DEFINITIONS: See Rule 100 (General Provisions And Definitions) of these rules for definitions of terms that are used but not specifically defined in this rule. For the purpose of this rule, the following definitions shall apply:

- 201 BEAD-LOT and BEAD-LOT IDENTIFIER** – A specific selection of a specific quantity of expandable polystyrene material, all portions of which typically share similar properties. This selected material has been tested in accordance with standard quality-control procedures and is traceable to the time and date on which it was packaged. Traceability is enabled by a bead lot identifier or lot number, which is a unique numeric (or alphanumeric) string that is permanently coupled with the selected material. The lot number always appears on one or more formal transfer/receipt documents retained by both the seller and the buyer, and identifies the material's plant of manufacture, as well as the date that it was packaged.
- 202 BLOCK (EPS FOAM BLOCK)** – A block-shaped solid made of EPS foam that was molded as a unit. Typically, a block's depth and width each exceed 23 inches (0.6 m) and a length exceeding 95 inches (2.4 m).
- 203 BLOWING AGENT** – Any substance that, alone or in conjunction with other substances, is capable of producing a cellular (foam) structure in a polymeric material by inflation.
- 204 CUP MOLDING** – The process of making cups, bowls, and similar containers by molding expanded polystyrene globules (prepuff).
- 205 DAY** - Any 24-hour period beginning at 12:00 AM, midnight.

- 206 EMISSION CONTROL SYSTEM (ECS)** – A system for reducing emissions of volatile organic compounds, consisting of a capture system (e.g., enclosures, hoods, and ductwork) and control device(s). An ECS may also include gas conditioning equipment such as condensers or prefilters.
- 207 EPS BEADS (EXPANDABLE POLYSTYRENE BEADS)** – Polystyrene beads, particles, or granules, usually less than one-twelfth inch in diameter, that are formulated with a blowing agent (typically 3.5% to 7% of bead weight). When subjected to prescribed heating in an expansion system, the beads puff up, expanding many times their original volume into low density foam globules (called “prepuff” or “puff”) from which a variety of EPS foam products are molded.
- 208 EPS FOAM (EXPANDED POLYSTYRENE FOAM)** – A lightweight, naturally white, foam material, made of polystyrene, from which a variety of common items are made, such as ice-chests, insulation board, protective packaging, and single-use cups.
- 209 LOOSE FILL** – Small, expanded polystyrene forms produced in a variety of shapes that are used as packing material or as stuffing in furnishings. These foam products typically have a density below 6/10 of a pound per cubic foot (pcf).
- 210 NONPRECURSOR ORGANIC COMPOUND** – Any of the organic compounds that have been designated by the EPA as “exempt” (having negligible photochemical reactivity). A listing of the compounds is found in Rule 100 of these rules and regulations.
- 211 POLYSTYRENE** – Any grade, class, or type of thermoplastic polymer, alloy, or blend that is composed of at least 80% polymerized styrene by weight.
- 212 PREPUFF or PUFF** – Expanded polystyrene globules, prior to molding, formed from EPS beads/granules that have been processed in an expander. No grind/regrind material (i.e., expanded EPS that has been through a grinder) or material within a grinding system is considered to be prepuff.
- 213 SHAPE** – An object made out of EPS that has been molded into a shape other than that of a block, cup, or bowl.

214 SPECIALTY BLOCK-PRODUCTS – For the purposes of this rule, a specialty block product is an EPS block or block-derivative (e.g., board, architectural form, etc.) that meets either of the following criteria:

214.1 Has a density of 2.0 pounds per cubic foot or greater, as determined by ASTM Method #C303; or

214.2 Has a density less than 0.8 pounds per cubic foot as determined by ASTM Method #C303.

215 VOLATILE ORGANIC COMPOUND (VOC) – Any organic compound that participates in photochemical reactions, except nonprecursor organic compounds.

216 VOC CONTENT OF RAW EPS – For the purposes of this rule, there are 3 different expressions for stating the VOC content of raw EPS beads/granules. Each of these expressions must be made in terms of either the number of pounds of VOC per 100 pounds of beads or the percentage of overall weight (including the VOC weight) that the incorporated VOC constitutes. The percent value shall be expressed with a precision of no less than the nearest tenth of one percent, which is equivalent to expressing the same number value in pounds VOC per 100 lbs. beads, to the nearest tenth of a pound. The acceptable expressions are:

216.1 Manufacturer-Certified Bead-Lot (MCBL) VOC-Content – A document such as a standard Certificate Of Analysis that numerically presents an EPS bead-lot's VOC content and must contain all of the following elements:

- a.** The VOC content printed or written on a paper document by the bead manufacturer, after the manufacturer has had the bead-lot tested to determine the lot's percent VOC, before shipping from the manufacturer; and
- b.** The manufacturer's name and the bead-lot, identified on the paper document with the appropriate bead-lot identifier; and
- c.** The signature of an officer of the manufacturing facility or the signature of an officer's designee, previously designated in writing by such an officer.

216.2 Post-Manufacture Laboratory-tested (PMLT) VOC-Content: The results of a laboratory test determining the VOC content of a representative sampling of an intermediate or finished expanded polystyrene-product, or such a test of raw beads any time after their MCBL VOC content has been assigned.

216.3 ISO-Certified Maximum Bead-Model (IMBM) VOC Content: A numerical value that represents the upper limit of a particular bead-model's VOC-content, which has been:

- a. Initially stipulated by the bead-model's manufacturer in a document that gives the bead-model's unique identifier, and
- b. Subsequently certified for accuracy by the International Standards Organization (ISO).

SECTION 300 – STANDARDS:

301 BLOCK MAKERS: An owner and/or operator of an EPS block-making facility shall comply with subsection 301.1 and, if applicable, subsection 301.2 of this rule.

301.1 Limit the sum of both the VOC that escaped to atmosphere and the residual VOC in the resulting blocks at the time they are released from the molding machine to not more than 3.0 pounds for every 100 pounds of raw beads processed.

301.2 Specialty Products Alternative Operating Scenario: When producing specialty block-products solely from raw EPS beads that exceed a VOC-content of 5.5 percent by weight, an owner and/or operator may choose the standard in subsection 301.2(a) by which to comply with this rule, but only if the requirements in subsections 301.2(b), and 301.2(c) are met.

- a. Limit the sum of both the VOC that escaped to atmosphere and the residual VOC in the resulting blocks at the time they are released from the molding machine to not more than 3.9 pounds for every 100 pounds of raw beads processed (3.9 lbs/100#), and

- b. Taking into account the total weight of all beads processed each year, limit the portion of that weight that is processed under the 3.9 lbs./100# standard to the percent allowed each year by Table I.

TABLE I

**ANNUAL PERCENTAGE LIMITS FOR SPECIALTY PRODUCTS MADE UNDER
THE SUBSECTION 301.2a STANDARD**

Column A	Column B
CALENDAR YEAR OF COLUMN B LIMIT	Maximum Percent Of All Raw-Beads Processed Each Year That Are Allowed To Be Processed Under The 3.9 Lb/100# Standard For Specialty Products Only
2006	10.0
2007	9.0
2008	8.0
2009	7.0
2010	6.0
2011 and continuing	5.0

- c. The proportion of annual raw-material throughput that is produced under the section 301.2(a) standard shall be calculated and recorded according to Section 502.1(d).

- 302 SHAPE MAKERS:** An owner and/or operator of an EPS shape-making facility shall limit the sum of the VOC that escaped to atmosphere and the residual VOC in the resulting shapes to 2.7 pounds for every 100 pounds of raw beads processed.
- 303 CUP MAKERS:** An owner and/or operator of an EPS cup-making facility shall limit the sum of the VOC that escaped to atmosphere and the residual VOC in the resulting cups to 3.2 pounds for every 100 pounds of raw beads processed.
- 304 LOOSE FILL MAKERS:** An owner and/or operator of a facility that makes expanded polystyrene loose fill shall limit the sum of both the VOC that escaped to atmosphere plus the residual VOC in the finished loose fill (measured right after the final curing process) to

not more than 2.4 pounds for every 100 pounds of raw EPS materials processed into finished loose fill.

305 PERFORMANCE OF ECS CONTROLLING VOC EMISSIONS: If an ECS is required by this rule, comply with subsections 305.1, 305.2, and 305.3 of this rule.

305.1 The control device (abatement subsystem) of such ECS shall comply with either subsection 305.1(a) or subsection 305.1(b) of this rule.

a. Reduce the weight of VOC-as-carbon that enters the control device by at least 94 percent; or

b. Maintain an hourly average outlet concentration of VOC below 20 milligrams per dry standard cubic meter. Express mass loading of VOC as milligrams of non-methane organic carbon.

305.2 Each ECS that is operated in order to comply with this rule shall be equipped with monitoring devices capable of demonstrating that the ECS is operating in a manner that assures compliance with this rule. The monitoring devices shall be installed, calibrated, maintained, and operated according to their manufacturers' instructions and the O&M Plan. Typically, such devices provide temperature, pressure, flow-rate, or other indicator(s) of proper ECS function (such as a continuous temperature recorder that monitors an oxidizer's combustion chamber or a condenser's outlet duct, or a pressure recorder that monitors the integrity of a permanent total-enclosure, etc.).

305.3 Records shall be kept according to Section 502.3 of this rule.

306 ECS OPERATION AND MAINTENANCE (O&M) PLANS:

306.1 An owner and/or operator shall provide, implement, and maintain an O&M Plan for each ECS required by this rule. The O&M Plan shall include the monitoring device(s) associated with the ECS.

306.2 The owner and/or operator shall submit to the Control Officer for approval the O&M Plan of each ECS, with its associated monitoring device(s), that is used

according to Sections 301.1, 301.2, 302, 303, or 304 of this rule. Also include in such O&M Plans:

- a.** Procedures for collecting and recording required data and other information in a form approved by the Control Officer, which shall include data collected through the O&M Plan and through the monitoring of key system operating parameters; and
- b.** Procedures and schedules for preventive and corrective maintenance performed for the purpose of maintaining the emission control system in proper operating condition.

306.3 An owner and/or operator of an EPS facility must comply with all O&M Plans that the owner and/or operator has submitted for approval but which have not yet been approved, unless notified otherwise by the Control Officer in writing.

307 VOC CONTAINMENT, IDENTIFICATION, AND DISPOSAL:

307.1 Contain VOC-Emitting Material:

- a.** When they are not in use, store all fresh and used non-EPS VOC-containing material in closed, leak-free containers that are labeled according to subsection 307.4. Such materials include but are not limited to cleaning solvents, inks, coatings, thinners, and their residues including residues on rags; and
- b.** Store raw EPS beads in closed, leak-free, labeled containers when not in use.

307.2 Materials addressed in Section 307.1 of this rule may be placed in an enclosure ducted solely to an ECS that is approved by the Control Officer, instead of in closed containers.

307.3 The owner and/or operator must implement procedures to minimize spills of VOC-containing materials described in subsection 307.1(a) of this rule, during

their handling and transfer to or from containers, vats, enclosed systems, waste receptacles, and other equipment, whether the material is fresh, used, or waste.

307.4 Identification and Labeling:

- a. Containers used for initial, intermediate, or final storage of VOC-containing materials addressed in subsection 307.1 of this rule shall be clearly labeled with their contents.
- b. Content-labeling done according to the requirements of federal hazardous waste (RCRA) or occupational safety (OSHA) statutes and codes meets the requirements in subsection 307.4(a) of this rule.

308 EXEMPTION:

308.1 Exemption from Sections 301.1 through 306.3: An owner and/or operator of a facility is exempt from the requirements of Sections 301.1 through 306.3 of this rule if the total VOC content of all raw EPS material processed by the facility is, in each calendar year, below 50 tons (100,000 lbs.) and, in each calendar month, below 12,000 pounds.

308.2 Burden of Proof: A person claiming any exemption from this rule or from a provision of this rule shall provide adequate records to verify and maintain any exemption. These may include records of raw material used, laboratory analyses, technical data sheets, and/or performance test results.

SECTION 400 - ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE: A person or owner/operator of a facility that is subject to Sections 301, 302, 303, or 304 of this rule shall comply with the following increments of progress:

401.1 By (date 3 months after date of adoption), the owner and/or operator shall comply with Section 502 through 502.2c of this rule;

401.2 By (date 4 months after date of adoption), the owner and/or operator either must submit an application or have been issued a revised permit that addresses the

installation and operation of the equipment to be used to achieve compliance with this rule; also, comply with Sections 307.1 through 307.4 of this rule ;

401.3 By (date, 12 months after date of adoption), the owner and/or operator must complete the installation of all equipment required to meet the provisions of this rule, and also comply with all O&M Plan requirements in Section 306 , and Section 502.3; and

401.4 By (date, 18 months after date of adoption) the owner and/or operator must comply with the applicable standards in Sections 301, 302, 303, 304, and 305 of this rule.

SECTION 500 - MONITORING AND RECORDS

501 RECORDS:

501.1 General: Records shall be kept complete and up-to-date, in a consistent and legible format.

501.2 Retention: Records required by this rule shall be retained for at least 5 years.

501.3 Use of Other Records: Records that are kept by an EPS facility for other agencies or purposes may be submitted to the Control Officer to meet the record requirements of this rule, provided such records contain the necessary information according to Section 502 of this rule.

502 RECORDKEEPING SPECIFICS:

502.1 Tracking EPS Beads: Effective (date: 3 months after adoption), a person subject to this rule shall comply with the following requirements, as applicable.

- a. Lot ID and VOC Content:** Prior to expanding any part of a bead-lot, an owner and/or operator shall obtain and retain an original or copy of the VOC-content, as defined in Section 217 of this rule, for each separate lot-number/identifier of beads received.

- b. Total Expanded, By Lot and Date:** Each day that raw EPS material is expanded in a facility's expander, an owner and/or operator shall record the amount of each bead-lot expanded and its corresponding lot number/identifier.
- c. Block-makers:** Each day that blocks are made, record the approximate weight of each newly molded block, measured to the nearest 2 pounds.
- d. Specialty Products Subject to Section 301.2(a):** An EPS-block facility owner and/or operator making specialty products under Section 301.2(a) shall:
 - (1) Maintain a log indicating when the facility is operating under the specialty-products alternative operating scenario; and
 - (2) Each month calculate the percent of total EPS raw material used during the current calendar year that specialty products, made under section 301.2(a), constitute; enter the calculations and results in the log.

502.2 Lists of Non-EPS VOC-Containing Materials: Non-EPS materials may include, but are not limited to, the following categories: inks, coatings, adhesives, reducers, thinners, solvents, cleaning materials, additives, spray-cans, sprayed lubricants, and any other VOC-containing materials that are not EPS.

- a.** An owner and/or operator shall maintain a current list of non-EPS materials, containing VOC, used at the facility. A complete and ordered assemblage of the required data meets the requirements for a list.
- b.** An owner and/or operator shall express VOC content of non-EPS material in one of the following three forms:
 - (1) Pounds VOC per gallon (or grams VOC per liter), or
 - (2) Fractional pounds of VOC per lb. material (or grams per kilogram), or

(3) The percent VOC by weight along with the specific gravity or density (2 numbers are required for each entry).

c. By the end of the following month, an owner and/or operator shall record the amount and type of each non-EPS material, containing VOC that was used during each month.

502.3 Records Of ECS Operation And Monitoring: On a daily basis, the owner and/or operator of a facility that operates an ECS to comply with this rule shall record key system operating parameters such as temperature, flow rate, pressure, and/or VOC-concentration, etc.

503 TEST PROCEDURES: An owner and/or operator of an EPS facility will be in violation of this rule if the VOC emissions, measured by any of the referenced test methods specified in this Section 503 and listed in Section 504 of this rule, do not comply with the applicable standards included by Sections 301 through 305 of this rule.

503.1 Each year between June 1 and August 31, an owner and/or operator shall conduct an annual performance test on each ECS used to meet a standard in this Rule 358, using the test methods designated by subsections 503.2 through 503.7 and incorporated by reference in Section 504 of this rule.

503.2 An owner and/or operator shall perform the measurement of airflow and gas flow into and out of the ECS by performing EPA Method 2, referenced in Section 504.1 of this rule.

503.3 An owner and/or operator shall determine the concentration of methane and ethane emissions by performing EPA Method 18, referenced in Section 504.2, or Method 25 (and its submethods) referenced in Section 504.3 of this rule.

503.4 An owner and/or operator shall determine the control efficiency of the VOC control device (abatement subsystem) of an ECS by performing EPA Method 25 (and its submethods), referenced in Section 504.3 of this rule.

503.5 An owner and/or operator shall determine the efficiency of a capture system according to both EPA Method 204 (and its submethods) referenced in Section 504.4 and the EPA guidance document referenced in Section 504.7 of this rule.

503.6 An owner and/or operator shall determine the concentration of total volatile organic carbon content in polymeric materials by performing Bay Area Quality Management District (BAAQMD) Method 45 as referenced in Section 504.5 of this rule or by performing South Coast Air Quality Management District (SCAQMD) Method 306-91, 1993 revision, as referenced in Section 504.6.

503.7 Determination of ECS Effectiveness: ECS effectiveness shall be determined from the results of a testing protocol based on mass balance, calculated according to the following formulas:

$$\% \text{ CAPTURE} = \frac{\text{VOC}_{\text{ECS}}}{\text{VOC}_I - \text{VOC}_P} \times 100$$

$$\% \text{ CONTROL} = \frac{\text{VOC}_{\text{ECS}} - \text{VOC}_{\text{St}}}{\text{VOC}_{\text{ECS}}} \times 100$$

$$\% \text{ EMITTED} = \frac{\text{VOC}_I + \text{VOC}_{\text{St}} - \text{VOC}_P - \text{VOC}_{\text{ECS}}}{\text{VOC}_I - \text{VOC}_P} \times 100$$

$$\% \text{ OVERALL (Capture+Control)} = \frac{\text{VOC}_{\text{ECS}}}{\text{VOC}_I - \text{VOC}_P} \times \frac{\text{VOC}_{\text{ECS}} - \text{VOC}_{\text{St}}}{\text{VOC}_{\text{ECS}}} \times 100$$

Where:

VOC_I is the VOC input in the form of the VOC content of a weighed mass of raw beads.

VOC_P is the VOC content of the products made from the weighed raw beads.

VOC_{ECS} is the VOC measured in the air entering the ECS.

VOC_{St} is the VOC remaining in the gas stream(s) emerging from the ECS during production.

503.8 Determination of Product Density: The ASTM Method #C303-02 referenced in Section 504.8 shall be used to determine the density of EPS foam blocks and block-derivatives.

503.9 Conforming Testing to Desired Production Characteristics: The owner and/or operator of an EPS facility must, through performance testing, demonstrate compliance with each alternative operating scenario chosen.

504 TEST METHODS ADOPTED BY REFERENCE: The EPA test methods as they exist in the Code of Federal Regulations (C.F.R.) on July 1, 2004, are adopted by reference. These adoptions by reference include no future editions or amendments. Copies of test methods referenced in this Section are available at the Maricopa County Environmental Services Department, 1001 North Central Avenue, Phoenix, AZ, 85004-1942. The other test methods from Bay Area Air Quality Management District and South Coast Air Quality Management District listed herein are also adopted by reference, each having paired with it a specific date that identifies the particular version/revision of the method that is adopted by reference.

504.1 EPA Reference Method 2 ("Determination of Stack Gas Velocity and Volumetric Flow Rate"), 2a ("Direct Measurement of Gas Volume Through Pipes and Small Ducts"), 2c ("Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts"), and 2d ("Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts"), (40 C.F.R. 60, Appendix A).

504.2 EPA Reference Method 18 ("Measurement of Gaseous Organic Compound Emissions by Gas Chromatography"), (40 C.F.R. 60, Appendix A).

504.3 EPA Reference Method 25("Determination of Total Gaseous Nonmethane Organic Emissions as Carbon"), (40 C.F.R. 60, Appendix A).

504.4 EPA Reference Method 204 ("Criteria for Determining Capture Efficiency"), 204A, 204B, 204C, 204D ("Volatile Organic Compounds Emissions in Uncaptured Stream from Temporary Total Enclosure"), 204E ("Volatile Organic Compounds Emissions in Uncaptured Stream from Building Enclosure"), and 204 F ("Volatile Organic Compounds Content in Liquid Input Stream {Distillation Approach}") (40 C.F.R. 51, Appendix M).

- 504.5** BAAQMD Method 45 ("Determination of Butanes and Pentanes in Polymeric Materials"), (BAAQMD Manual of Procedures, Volume III, January 19, 2000).
- 504.6** SCAQMD Method 306-91, February 1993 revision ("Analysis of Pentanes In Expandable Styrene Polymers"), Applied Science & Technology Division – Laboratory Services Branch.
- 504.7** EPA Guidance Document, "Guidelines for Determining Capture Efficiency", January 9, 1995.
- 504.8** American Society of Testing Materials, ASTM Method #C303-02 (Standard Test Method for Dimensions and Density of Preformed Block and Broad-Type Thermal Insulation), 2002.